

REMARKS

At the issuance of the outstanding Office Action claims 1-18 were pending in the application. Applicants have amended the claims to more particularly point out what applicants' regard as their invention. Specifically, the claims have been amended to better define the product bright stock in terms of its viscosity, the feed as being derived from the residuum of a vacuum distillation and the boiling range of the light fraction.

Applicants respectfully request entry and consideration of these amendments because they raise no new issues requiring further consideration or search and will either place the claims in condition for allowance or in better form for an appeal.

Claims 1-18 were rejected under 35 USC§103. More specifically claims 1, 3-5, 10-15 and 16-18 were rejected under 35 USC§103(a) as being unpatentable over Miller (US5833837) in view of Baker (US5951848). Applicants respectfully traverse this rejection for at least the following reasons.

The present invention relates to a process for producing a stable lubricant bright stock, a lubricating oil of high viscosity obtained from residues of vacuum distillation by dewaxing. The feed to the process is a petroleum vacuum residuum-derived stream having designated contents of sulfur and nitrogen. In the process according to the invention, the vacuum residuum-derived stream undergoes a deep cut distillation at a cut point in the range of 1150° F to 1300° F prior to hydrocracking and hydroisomerization to produce the lubricant bright stock. The deep cut distillation of a vacuum residuum derived stream prior to hydrocracking and hydroisomerization to produce a

lubricant bright stock are, among other features, neither disclosed nor suggested by the cited references.

The Miller reference discloses a process for making a light and a heavy base oil. The present invention is a process for making a bright stock, which has a higher viscosity than the base oil of the Miller reference. In this regard, applicants invite the Examiner's attention to Table 3 of the Miller reference in which the heavy oil had a 100° C viscosity of at most about 13cSt, well below the 15+cSt or 20+cSt typical of bright stock.

The reason for this result is that the process of the Miller reference uses a light distillate fraction to produce a base oil, whereas the present invention uses the bottoms from a vacuum distillation to produce a lubricant bright stock. Attached hereto, for the purpose of explanation and not limitation, is a hand drawing by Stephen J. Miller comparing an embodiment of a process described in the Miller reference to an embodiment of a process in accordance with the present invention, which illustrates this fundamental difference between the invention and the prior art. The current amendments to the claims are designed to clarify this point.

The outstanding Office Action recognizes that the Miller reference does not disclose the designated concentrations of sulfur and nitrogen of the present claims. In this regard, applicants invite the Examiners' attention to lines 12-14 of the present specification which indicates that the method of the invention depends at least in part of the quality of the feed stock.

The Miller reference discloses a wide variety of waxy feed stocks that may be used in that process, including whole crudes, reduced crudes, vacuum tower distillates, atmospheric tower residua, cycle oils, gas oils, vacuum gas oils, synthetic crudes and other heavy oils. The Miller reference neither discloses

nor suggests using a vacuum residuum-derived stream, i.e. the bottoms from a vacuum distillation. Moreover, the Miller reference neither discloses nor suggests conducting a deep cut distillation on any of its feeds.

What is potentially confusing is that the "heavy fraction" of the Miller reference is analagous to the "light fraction" of the present invention. What is called the "light fraction" in the present invention would be, for example, a 700 ° F to 1200 ° F distillate as shown in the Example of the present specification. In the Miller reference, the "heavy fraction" is dewaxed using a conventional dewaxing catalyst such as ZSM-5 under cracking conditions. See claim 1, step d. In the present invention the light fraction (analagous to the "heavy fraction" in the Miller reference) is dewaxed in the presence of a hydroisomerization catalyst under hydroisomerization conditions. Thus, the Miller reference neither discloses nor suggests the present invention and actually teaches away from it.

The outstanding Office Action relies on the Baker reference for its disclosure of a feed stock derived from a hydrocracked crude oil residuum with a concentration of sulfur less than about 39ppm and a concentration of nitrogen less than about 2300ppm. As pointed out above, there is nothing in the Miller reference that would motivate a person of ordinary skill to select a vacuum residuum-derived feedstock. Such motivation is only found in applicants' own disclosure. Although the Baker reference discusses hydrocracking crude oil residua, it does not teach making a bright stock. Also, it does not teach the deep cut distillation prior to hydrocracking. Finally, even assuming for the sake of argument that it would have been obvious to modify the process of Miller to include a feed stock derived from the hydrocracked crude oil residuum as disclosed by Baker, the combination would neither disclose nor suggest the present invention in light of the deficiencies of the Miller reference pointed out above.

The disclosure in the Miller reference of an isomerization catalyst which is a SAPO-11 catalyst with a platinum component does not render the claimed invention obvious because the process in the Miller reference involves contacting a much lighter fraction with the isomerization catalyst than the heavier fraction that is hydroisomerized in the present invention in step (d).

The further grounds of rejection are all based on the Miller reference. In light of the prior discussion of that reference, applicants respectfully traverse the rejections for claim 2, claim 6 and claim 7-9.

In summary, the cited references neither disclose nor suggest a process for making a lubricant bright stock from a vacuum residuum-derived feed having designated levels of sulfur and nitrogen from which a very heavy fraction is removed by a deep cut distillation and in which a heavy oil is hydrocracked dewaxed under hydroisomerization conditions.

In light of the foregoing, applicants respectfully request a favorable reconsideration of the outstanding Office Action and an early Notice of Allowance.

Respectfully submitted,


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